SUPPORT FOR THE AMENDMENT

Support for the amendment to claim 1 is found on page 10, lines 14-16 of the specification. Support for claim 14 is found on page 7, lines 24-26 of the specification. Support for claim 15 is found on page 7, lines 30-31 of the specification. Support for claim 16 is found on page 7, lines 32-35 of the specification. Support for claim 17 is found on page 8, lines 27-29 of the specification. Support for claim 18 is found on page 8, lines 33-35 of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of this amendment, claims 1-18 will now be active in this application.

REQUEST FOR RECONSIDERATION

The claimed invention is directed to an electrode material for lithium ion batteries, a method of preparing a lithium ion battery and a lithium ion battery comprising same.

Applicants wish to thank Eaminer Crepeau for the helpful and courteous discussion held with their U.S. representative on July 12, 2011. At that time, applicants' U.S. representative noted that Yang failed to disclose an aggregate of silicon particles and that such aggregation was implicit by the recitation of a primary particle size. The examiner agreed but indicated that a more explicit recitation as to the presence of an aggregate would be more favorably considered. The following is intended to expand upon the discussion with the examiner.

Battery storage will play a significant role in the consumption of energy in the future. Batteries which can provide for high energy density and still provide high reversible capacitance are sought.

The claimed invention addresses this problem by providing an electrode material suitable for use in lithium ion batteries, comprising nanoscale silicon aggregate particles, graphite and a binder. Applicants have discovered the use of nanoscale silicon aggregate particles to provide for good cycle behavior, high reversible capacitance and good mechanical stability. Such an electrode material is nowhere disclosed or suggested in the cited art of record.

The rejections of claims 1-7 and 9-13 under 35 U.S.C. 103(a) over Yang et al. *Electrochemical and Solid State Letters* , 2003 alone, and in view of Pridoehl et al. U.S. 7,776,304 or WO 2005/049492 and of claim 8 5 U.S.C. 103(a) over Yang et al. alone, and in view of Pridoehl et al. in further view of Hamamoto et al. U.S. 2002/0168576 are respectfully traversed.

The cited combination of references fails to disclose or suggest a electrode material comprising nanoscale silicon aggregate particles.

Yang et al discloses forming an Si/C composite by pyrolyzing nanosized silicon having a particle size of <100 nm and graphite having a particle size of 1-2 μm dispersed in an organic matrix. The pyrolyzed material is then ground to a powder ranging in size from 3.6 to 10 μm in diameter and formed into an electrode by combination with carbon black and PVdF as a binder (see experimental section). Page 4 of applicants' specification discusses Yang et al. as obtaining reversible capacitances of more than 700 mAh/g during 30 cycles but **fading could not be avoided**. There is no disclosure or suggestion of nanoscale silicon aggregate particles.

In contrast, the claimed invention is directed to an electrode material comprising nanoscale silicon aggregate particles. Applicants note that the claims have been amended to recite nanoscale silicon **aggregate** particles, a feature of the claimed invention which was already evident by the recitation of a primary particle size. As Yang et al fails to disclose nanoscale silicon aggregate particles, the claimed invention is not rendered obvious by this reference.

The basic deficiencies of the primary reference are to cured by any of the secondary references.

Pridoehl et al. has been cited for disclosing nanoscale crystalline silicon powder having an BET surface area of from 20-150 m^2/g (abstract). The reference identifies the use of doped silicon powders **for semiconductors in electronic components** (column 1, lines 55-65). Column 3, lines 46-48 generally describes the use of the nanoscale crystalline silicone powder to produce electronic components, electronic circuits and electronically active filler. Not withstanding the disclosure of a nanoscale crystalline silicon powder, there is no suggestion to uses such a nanoscale crystalline silicon powder in the preparation of an

electrode material nor any enhancement in reversible capacitance and fading. The disclosure in electronic components is clearly in the context of semiconductor materials and not suggestive of use in a battery electrode.

Further, Yang et al discloses their own advances in electrode Si/C composite materials, and notes that a simple blend of silicon and carbon cannot suppress the rapid capacity fade on cycling, **even when nanosized powder was used or mechanical milling was performed** (page 1, column 1, second full paragraph). In this context Yang et al. proceeded with a technique of pyrolyzing PVC having nanosized silicon and fine graphite dispersed therein. Thus, in the context of trying to obtain a high capacity lithium storage material, Yang et al. report the use of nanosized silicon but note that previous attempts to suppress capacity fade **were not effective,** even **when using nanosized powder**.

Since Yang et al. suggests that the best performance is observed when using nanosized silicon, it would not have been obvious to use the aggregated nanoscale silicon powder of Pridoehl et al. in the electrode of in the electrode of Yang et al. The belief that nanosized silicon would provide the best results in terms of capacity fade would not render obvious the use of an aggregated nanosized silicon due to of the presence of larger aggregates.

Hamamoto et al. has been cited for disclosing a vinylene carbonate containing electrolyte in a lithium secondary battery. Such a disclosure fails to cure the basic deficiencies of Yang et al. in failing to suggest nanoscale silicon aggregate particles in an electrode material.

As the cited art of record fails to suggest nanoscale silicon aggregate particles in an electrode material, the claimed invention is not rendered obvious by this combination of references and accordingly, withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

The rejections of claim 7 under 35 U.S.C. §112, second paragraph and 35 U.S.C. §101 has been obviated by amendment.

Applicants have now amended claim 7 to recite "A" method as suggested by the examiner and further amended the claim to recite the active step of assembling with an electrode as in claim 1. In view of applicants' amendment, withdrawal of these grounds of rejection is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
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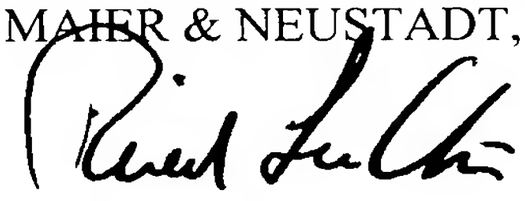

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